

**ABSTRACT**

A passivation film including a nitride-reformed layer that excludes chromium nitride (CrN) is formed on a surface of an austenitic stainless steel. The passivation film composed of chromium oxide functions as protection film against lead-free solder. As a result, the surface of stainless steel is hard to be corroded even when it contacts with the lead-free solder in its melted solder, thereby improving its corrosion resistance and its wear resistance substantially. In a case of SUS316 stainless steel, on an outermost surface of which the passivation film is formed, a period of lapsed time until corrosion of the stainless steel starts extends to about 500 hours as line Le shown in Fig. 4, and its corrosion depth indicates shallower one (20 through 25  $\mu\text{m}$ ) as compared with the conventional one, thereby expecting that its durable year can be improved to an extent similar to that using a lead-filled solder, in order to obtain a stainless steel with enhanced corrosion resistance.